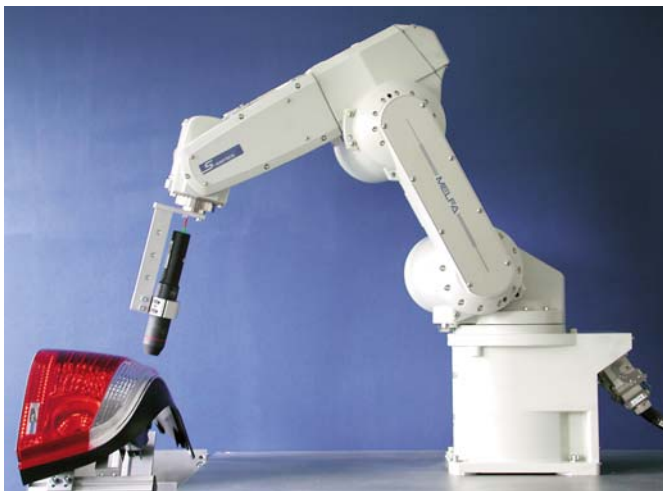


Industry: Quality assurance / motor industry
Products Used: Industrial robots / RV-6S series
articulated-arm robots

Flexible part measurement system for quality control

The company Schmidtke electronic in Garbsen, Germany, has chosen an articulated-arm robot from Mitsubishi Electric to perform high-precision quality control tasks in a system for checking plastic covers for rear lights used in the motor industry. A sensor installed on the robot arm measures the dimensions of the transparent injection-moulded parts without physically touching them.



Attractive design is a key selling point in the car industry and this has resulted in a very wide range of different designs for both the rear lights themselves and the transparent and coloured covers made of plastic or glass, which contribute much the appearance of the back of the vehicle. Modern car manufacturers also have demanding quality specifications for these parts, with very fine manufacturing tolerances.

When Schmidtke electronic was contracted by a car industry supplier to develop a 100% quality in-production testing system for all rear light cover types they needed a solution that could deliver flexibility, precision and speed. At the moment the parts to be tested are still placed in the workpiece holder by hand and checked by the robot; in the next phase they will also be placed and positioned automatically.

The key component of the contactless measurement system is an RV-6S articulated-arm robot with six degrees of freedom, a 696mm reach and a 6kg handling payload capacity. This small robot, which is also specified for installation in heavy-duty industrial environments, achieves repeatability of 0.02mm at speeds of up to 9,300mm/s. Its arm is fitted with a confocal sensor designed specially for checking transparent materials. The robot moves this sensor over the surface of the component to be tested with great speed and precision, following a predetermined line. At the beginning of the testing procedure the operator can enter the part code to select the program to be executed by the robot.

Geometrical data records describing the precise dimensions of ideal mouldings are stored for each product in a computer connected to the robot controller and used as the source of reference values for the quality measurements and analysis. The sensor on the robot arm returns the measurements for predefined positions on the surface of the moulding and the computer compares them with the reference values, stores the results and displays them on a monitor.



High speed combined with great precision were two of the main reasons why we chose the articulated-arm robot from Mitsubishi Electric.

Werner Schmidtke
 proprietor of Schmidtke electronic in Garbsen



This system was originally designed for quality control of mass-produced plastic parts for the motor industry, but it can easily be modified for other applications by fitting different sensors.

First published in March 2007 by Mitsubishi Electric on the basis of information provided by Schmidtke electronic in Garbsen, Germany.